Attorney Docket No.: 3247/NJJ (058201-00050)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	SCOTT P. SCHREER
Confirmation No.	3357
Serial No.:	10/086,089
Filed:	February 28, 2002
Title:	IMPROVED SYSTEM AND METHOD FOR ACCESSING....
Examiner:	Jason P. Salce
Group Art Unit:	2611

October 12, 2006

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22314-1450

DECLARATION UNDER RULE 1.132

I, Nasir Memon hereby declare as follows:

1. I am currently Professor, Computer and Information Science Department at Polytechnic University where I have served in this capacity since 2004. Prior to this I was Associate Professor at this University for six years. Previously, I had been a visiting faculty at the Imaging Technology Department of Hewlett Packard Research Labs. I have also been Assistant Professor at Northern Illinois University, Arkansas State University and Research Assistant at University of Nebraska.

2. I hold a PhD in Computer Science from the University of the Nebraska, an MS in Computer Science from the University of Nebraska, as well as a M.Sc. in mathematics from

Birla Institute of Technology and Science in India, and a Bachelor of Engineering from Birla Institute of Technology and Science in India.

3. I have previously served as a testifying expert in the field of Multimedia Digital Rights Management, Digital Watermarking, and Digital Forensics. In these fields I qualified for government grants and provided consultancy on information security, coding and steganography to the military. I have frequently lectured and headed standards committees in this area.

4. I have received numerous awards, various US Patents, have published articles and book chapters in extremely large number of journal publications and conference publications. I have chaired numerous committees, and am considered an expert in the field of digital rights management.

5. A copy of my CV is attached.

6. I have reviewed the present patent application serial number 10/086,089 which was published as US Patent Application Publication No. 2002/0080976 on June 27, 2002 (hereinafter "Schreer"). I have also reviewed the final office action issued by the United States Patent and Trademark Office dated June 9, 2006 as well as the previous office action issued by the United States Patent Office dated December 20, 2005 and the response submitted by the inventor dated March 20, 2006. I have also reviewed two references relied on by the examiner. Specifically, US Patent 6,253,193 issued to Ginter et al. (hereinafter "Ginter"), and US Patent 6,385,596 issued to Wiser et al. (hereinafter "Wiser"). I have also focused on the claims submitted by the inventor, Scott Schreer in his amendment of March 20, 2006.

7 For the specific reasons as stated hereinafter, as one skilled in the art, I do not believe that independent claims 1 and 9 are obvious over the teachings of Ginter in view of Wiser. I further believe that many of the claims dependent upon claims 1 and 9 are also not obvious over

the combination of these references. Furthermore, it is my opinion that one skilled in the art reading Schreer would find adequate support for the recitations in claims 1-9.

8. Schreer describes a method of compensating at least one rights' holder responsible for the content of a digital audio recording file, for the public performance of the content which is included in a public broadcast. Schreer essentially picks up the broadcast when it is being sent by the sender. He provides for a monitoring station that receives the broadcast just as one of the members of the public would receive it. Based upon such public broadcast, it recognizes that the sender has publicly broadcast the particular performance and credits the rights holder through the use of a compensation method.

9. Ginter is essentially interested in buying and selling of media. He describers a system, referred to as a "Virtual Distribution Environment" (VDE) which regulates, monitors and controls all information transmitted. (See column 6, lines 32 - 57). Ginter deals with interactions between the seller of the information which is transmitted within the VDE and the buyer which receives the information. Ginter is essentially interested in an area of commerce which is different from that of Schreer. The entire domain and area being addressed is substantially different. (See column 3, lines22 – 33, column 9 lines 35 - 61).

Ginter is concerned with transmitting information from a seller to a specific buyer and controlling the use of the information by the buyer. When Ginter refers to a broadcast, he refers to a specific communication between a seller and a particular user or buyer of the product which is transmitted within the container referred to as a VDE. Ginter is not interested in a public broadcast to multi-user's.

Ginter monitors the specific receiving by the user. Any sending of the information is only monitored at the receiving end by the user.

In Schreer, he is interested in monitoring the information based upon its being sent.

10. A clear way of understanding the distinction is that in Schreer once the information is broadcast, even if no user has his receiver on and no one actually receives the particular music or information being broadcast, there is still a monitoring and recording of the fact that the music or other information has been broadcast, based upon the fact that the sender has broadcast the information. Thus, even if no one is actually receiving and using it, it will still be counted as a broadcast.

In Ginter, on the other hand, if there is no specific user who has requested the information and is actually receiving it, there will be absolutely no recording of the information.

11. Although Ginter mentions and allows broadcast of information, the business models and systems he describes essentially involve monitoring the consumption of a broadcast at the user end. Applying Ginters teaching to the problem addressed by Schreer will require having a user agent with every single user that receives the broadcast content and report back to the server, Schreer elegantly solves this problem by simply monitoring the broadcast and charging the sender based on content broadcast. So only one monitoring station is needed per broadcast domain as opposed to one per user as taught by Ginter. None of the examples or figures of Ginter anticipate the solution described by Schreer,

Schreer is not user specific to the extent that a particular user has to request the information. It does not monitor the number of users involved. It does not monitor whether there is even a single user. On the other hand, it monitors the fact that the sender has publicly broadcast this information, and the monitoring station just picks this up just as it would an end user picking up a public broadcast.

12. Wiser teaches how to control the use of a performance that a user received, by restricting him so that he won't pass it on. Wiser again monitors the user receiving the information and how he makes use of it. Wiser has no ability to monitor the sending or transmission or public broadcast of the information.

13. I have specifically reviewed particular paragraphs of Ginter that were identified by the examiner in the various office actions mentioned above. Specifically, I reviewed col. 3, line 28; col. 14, line 5-28; col. 18, lines 12-13; col. 3 lines 34-35; col. 23, lines 51-59; col. 3, lines 20-24; col. 4, lines 8-13; col. 4, lines 17-20; col. 3, lines 24-29; col. 260, lines 11-15; col. 58, lines 43-46 and lines 59-64; Fig. 20; col. 53, lines 32- col 154, lines 67;col. 127, lines 6-8; col 53, lines 1-10, col. 14, lines 5-10; col. 18, lines 60-64; col. 127, lines 45-49; col. 153, lines 53-59; col. 153, lines 62-64; col. 155, lines 22-23; Fig. 16; col. 152, lines 26-27; col. 9, lines 35-60; col. 130, lines 7-11; col. 58, lines 43-46 and lines 59-64, col. 7, lines 51-52; col. 153, lines 32-col. 154, line 49; col. 127, lines 6-8; col. 53, lines 1-10; col. 14, lines 5-10; col. 18, lines 60-64; col. 127, lines 45-49; col. 153, lines 53-59 and 62-64; Fig. 16; col. 155, lines 22-23; col. 152 lines 26-27; col. 3 lines 20-24; col. 4, lines 8-18.

14. In all of the above, there is no teaching of monitoring the public broadcast transmitted by a sender regardless of whether any user receives the information or not. All of these broadcast or any reference to the transmission of information relates to the user associated with the sender and essentially monitoring the user's receiving the information rather than the sender sending the information.

15. I have also reviewed the Wiser reference and specifically including col. 23, lines 18-19; col. 11, lines 53-55; col. 23, lines 21-30 and col. 11, lines 55-57. Again, nothing at Wiser

provides any teaching that there is any monitoring at the occurrence of a sending of a broadcast, regardless of whether there is any receipt of it.

16. I also reviewed Schreer and I believe that the claims that were submitted with the Schreer Amendment of March 20, 2006, would be understood by one skilled in the art as being taught by Schreer. Specifically, I refer to the material covered in paragraph 0044, paragraphs 0002 and 0003; paragraph 0004; paragraph 0007; paragraph 0023; paragraph 0026; and paragraph 0028.

17. All of the above teach one skilled in the art that we are dealing with a public broadcast to users who typically receive radio or television broadcast signals of music in the like.

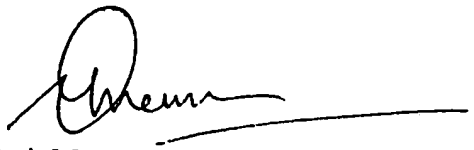
18. Furthermore, paragraph 0044 refers to a monitoring means, and its use therein and elsewhere provides one skilled in the art the additional information that the monitoring means is receiving the broadcast just as an end user would receive it who is listening to the broadcast that is publicly being sent out.

19. Accordingly, it is my belief that the invention as claimed in the Schreer Amendment of March 20, 2006, including independent claims 1 and 9 are neither, anticipated by the Ginter or Wiser nor would they be obvious taking the combination of both of them together. I believe that they are both teaching away from the Scheer invention and neither of them are providing any teaching of monitoring of the sender by means of receiving a signal that is broadcast in the usual manner of a public broadcast, and compensating the rights owner based upon such receipt of materials sent.

20. Furthermore, I believe that the claims in the Scheer Amendment of March 20, 2006 are adequately supported by Schreer and one skilled in the art would be taught the claims from reading the specification as I reviewed.

21. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

10/12/06
Date:



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Education

Ph.D. Computer Science, University of Nebraska-Lincoln, August 1992,
Graduate Advisor: S. Magliveras and K. Sayood,
Dissertation Title: "Image Compression Using Efficient Scan Patterns."
M.S. Computer Science, University of Nebraska-Lincoln, May 1989,
Thesis Advisor: S. Magliveras,
Thesis Title: "On logarithmic signatures and applications."
M.Sc. Mathematics, Birla Institute of Technology and Science, Pilani, India, 1982.
B.E. Chemical Engineering, Birla Institute of Technology and Science, Pilani, India, 1982.

Research Interests

Data Compression, Image Processing, Computer and Network Security, Multimedia Communication and Security, Digital Forensics, Steganography.

Professional Experience

Professor, Computer and Information Science Department, Polytechnic University, September 2004 to present.

Associate Professor, Computer and Information Science Department, Polytechnic University, August 1998 to August 2004.

Visiting Faculty, Imaging Technology Department, Hewlett Packard Research Labs, August 1997 to August 1998.

Assistant Professor, Computer Science Department, Northern Illinois University, August 1994 to June 1998.

Assistant Professor, Computer Science and Mathematics Department, Arkansas State University - August 1992 to 1994.

Research Assistant/Teaching Assistant, Computer Science and Engineering Department, University of Nebraska, January 1987 to May 1992.

Systems Engineer, Sigma Solvents Pvt. Ltd., Bombay, India, January 1982 to August 1986.

Awards and Patents

Jacobs Excellence in Education Award. Polytechnic University, 2002.

ISO/IEC Certificate of Appreciation. International Standards Organization, 2002.

NSF CAREER Award, *Lossless, Near-lossless and Lossy Plus Lossless Image Compression*, 1997.

US Patent 5903676, X. Wu and N. Memon, *Context-based, Adaptive, Lossless Image Codec.*

US Patent Application, D. Bhattacharjee, N. Memon and Amir Said, *Segmentation of Compound Documents*, pending approval.

US Patent Application, N. Memon and D. Tretter, *A Simple Variable Quantization Technique for JPEG Part 3.* Pending approval.

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US Patent Application, D. Buschsmith, N. Memon and R. Fish. *Secure Content Access Utilizing Authentication, Encryption and Firewall Technologies for Home Gateways.*

US Patent Application, K. Shanmugasundaram, N. Memon and H. Bronniman. *Pay load attribution System.* Pending Approval.

US Patent Application, M. Kharrazi, N. Memon and K. Shanmugasundaram. *Network Abuse Detection System.* Pending Approval.

US Patent Application, A. Pal, N. Memon and K. Shanmugasundaram. *Method for Evidence Reassembly.* Pending Approval.

Publications

Book Chapters and Magazine Articles

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2. M. Chen, N. Memon and E. Wong. Binary Image Watermarking. *Multimedia Security: Steganography and Digital Watermarking Techniques for Protection of Intellectual Property*, Idea Group Publishing, To appear July 2004.
3. R. Chandramouli and N. Memon. Image Steganalysis. *Optical and Digital Techniques for Information Security*, Springer Verlag, December 2003.
4. M. Ramkumar and N. Memon. Making a Mark. *Optical Engineering Magazine*, PP 20-23, January 2003.
5. T. Suel and N. Memon. Algorithms for Delta Compression and Remote File Synchronization. *Handbook of Lossless Image Compression*, CRC Press, 2002.
6. R. Chandramouli, N. Memon, M. Rabbani. Digital Watermarking. *Encyclopedia of Imaging Science and Technology.* J. Hornak, Editor. John Wiley, October 2001.

7. R. Ansari and N. Memon. The JPEG Standard. *Handbook of Image and Video Processing*, A. Bovik, Editor, Academic Press, 2000. Second Edition 2005.

8. R. Ansari and N. Memon. The JPEG Lossless Compression Standards. *Handbook of Image and Video Processing.* A. Bovik, Editor, Academic Press, 2000. Second Edition 2005.

9. D. Tretter, N. Memon and C. Bouman. Multispectral Image Compression. *Handbook of Image and Video Processing.* A. Bovik, Editor, Academic Press, 2000. Second Edition 2005.

10. K. Sayood and N. Memon. Lossless Compression. In *Handbook of Communications.* J. Gibson, Editor, CRC Press, 1996. Second Edition 2001.

11. N. Memon and K. Sayood. Facsimile Compression. In *Handbook of Communications.* J. Gibson, Editor, CRC Press, 1996. Second Edition 2001.

Journal Publications

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2. J. Zambreno, A. Choudhary, R. Simha, N. Memon. SAFEOPS: An approach to embedded software security", ACM Transactions on Embedded Systems, Feb. 2005.

3. Anandabrata Pal and Nasir Memon. Automated reassembly of file fragmented images using greedy algorithms. Accepted for publication, *IEEE Transactions on Image processing*, January 2005.

4. Perceptual Audio Hashing Functions. H. Ozer, B. Sankur, N. Memon and E. Anarim. Accepted for publication *EURASIP Journal of Applied Signal Processing.* March 2005.

5. S. Weidenbeck, J. Waters. J. C. Birget, A. Brodskiy and N. Memon. PassPoints: Design and Evaluation of a Graphical Password System. To appear in *International Journal of Human-Computer Studies for the Special Issue on Usable Privacy and Security.* May 2005.

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17. R. Radhakrishnan , N. Memon On the Security of the SARI Image Authentication System. *IEEE Transactions on Circuits and Systems for Video Technology*, 12(11):1030-1033, November 2002.

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3. Sevinc Bayram, Ismail Avcibas, Bulent Sankur, Nasir Memon Image manipulation detection with binary similarity measures. Accepted for presentation, *EUSIPCO - European Signal Processing Conference*, Turkey, September 2005.

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8. 11. M. Ramkumar, N. Memon, KPI: A Security Infrastructure for Trusted Devices, Pre-Conference Workshop, *12th Annual Network and Distributed System Security Symposium*, San Diego, California, February 2005.

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10. M. Kharrazi, T. H. Sencar, N. Memon. Benchmarking steganographic and steganalysis techniques, *Security and Watermarking of Multimedia Contents*, San Jose, CA, January 16-20, 2005.

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17. H. Ozer, B. Sankur, and N. Memon. Robust Audio Hashing for Audio Identification. *EUSIPCO - European Signal Processing Conference*, October 2004.

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19. Y. Zhang, M. Ramkumar and N. Memon. Information Flow Based Routing Algorithms for Wireless Sensor Networks. In proceedings of *Globecom 04*, November 2004.

20. K. Shanmugasundaram, H. Broinnimann and N. Memon. Payload Attribution via Hierarchical Bloom Filters, 11th ACM Conference on Computer and Communications Security, Washington DC, October 2004.

21. M. Ramkumar, N. Memon, Preloaded Key Distribution Schemes for Ad Hoc Networks , International Conference on Computing, Communications and Control Technologies (CCCT) 2004, Austin, TX, Aug 2004.

22. M. Ramkumar and N. Memon. On the Security of Random Key Pre-Distribution Schemes. *IEEE Information Assurance Workshop*. Westpoint, NY, June 2004.

23. M. Kharrazi, K. Shanmugasundaram and N. Memon. Network Abuse Detection via Flow Content Characterization. *IEEE Information Assurance Workshop*. Westpoint, NY, June 2004.

24. M. Jiang, X. Wu, E. Wong and N. Memon. Steganalysis of Boundary-based Steganography using Autoregressive Model of Digital Boundaries. *IEEE Conference on Multimedia and Expo*, Taiwan, 2004. M. Ramkumar, N. Memon, Multiple Authorship Protocol For Watermarking, 38th Annual Conference on Information Sciences and Systems (CISS), Princeton, NJ, March 2004.

25. M. Ramkumar, N. Memon, R. Simha. Pre-Loaded Key Based Multicast and Broadcast Authentication in Mobile Ad-Hoc Networks, *Proceedings of Globecom 2003*, San Francisco, CA, December 2003.

26. K. Shanmugasundaram and N. Memon. Automatic Reassembly of Document Fragments via Context Based Statistical Models, *19th Annual Computer Security Applications Conference*, Las Vegas, Nevada, December 8-12, 2003.

27. M. Sosonkin, G. Naumovich and N. Memon. Obfuscation of Design Intent in Object-Oriented Applications, *Digital Rights Management Workshop*, Washington DC, October 2003.

28. R. Chandramouli, M. Kharrazi and N. Memon. Image Based Steganography: Concepts and Practice, *Proceedings of International Workshop on Digital Watermarking*, Springer Verlag LNCS, Seoul, October 2003.

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30. V. Ananthapadmanabhan, P. Frankl, N. Memon and G. Naumovich. Design of a Laboratory for Information Security Education, *Proceedings of World Conference on Information Security Education*, pp 61-73, Monterey, CA, July 2003.

31. A. Pal, K. Shanmugasundaram and N. Memon. Reassembing Image Fragments, *Proceedings ICASSP*, Honk Kong, April 2003.

32. D. Chen, Y-J Chiang, N. Memon and X. Wu. Optimal Alphabet Partitioning for Semi-Adaptive Coding of Sources of Unknown Sparse Distributions. *Proceedings of the Data Compression Conference*, pp 372-381, IEEE Press, Utah, March 2003.

33. L. Butterman and N. Memon. An Error-Resilient Blocksorting Compression Algorithm. *Proceedings of the Data Compression Conference*, pp 417, Utah, March 2003.

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2. N. Memon (PI), Source Camera Identification. National Institute of Justice. $350,000, Sep 05 - 07.

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38. N. Memon (PI). Compression of Multi-spectral Image Data, Research Initiation Award, *Arkansas Science and Technology Authority*, $29,000 January 1994.

39. A. Talmadge (PI), A. Sustich (Co-PI) and N. Memon (Co-PI), A Establishment of a Multimedia Learning Environment, *Arkansas Dept. of Higher Education*, $80,000, April 1994.

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42. N. Memon (PI). Compression of Space Data, *Arkansas Space Grant Consortium*, $1,960, February 1993.

Professional Service

Editorships

1. Associate Editor. *IEEE Signal Processing.* Jan 06 - present.
2. Associate Editor. *IEEE Security and Privacy.* Jan 06 - present.
3. Associate Editor. *IEEE Transactions on Information Forensics and Security.* Jan 2005 - Current.
4. Associate Editor - *LNCS Transactions on Multimedia Security*, Sept 05 - current.
5. Associate Editor, *International Journal of Security and Networks.* July 05 - Current.
6. Editorial Board, *The Advances in Cryptology & Information Security (ACIS) series.* IOS Press. July 05 - Current.
7. Associate Editor, *Journal of Electronic Imaging.* Jan 2003 - Dec 05.
8. Associate Editor. *ACM Multimedia Systems Journal.* September 2001 - 2004.
9. Associate Editor. *IEEE Transaction on Image Processing.* March 1999 - 2002.
10. Guest Editor. Special Issue on Multimedia Security and Rights Management. *EURASIP Journal on Applied Signal Processing.* Expected Publication March 2004.
11. Guest Editor. Special Issue on Security of Data Hiding Technologies. *Signal Processing Journal.* Expected Publication August 2003.
12. Guest Editor. Special Issue on Multimedia Security *ACM Multimedia Systems Journal*, June 2003.
13. Guest Editor. Special Issue on Signal Processing for Data Hiding in Digital Media & Secure Content Delivery. *IEEE Transactions on Signal Processing.* April 2003.
14. Project Co-editor - *JPEG-LS Extensions*, Lossless Compression Standards Project, JPEG/JBIG, International Standards Organization, November 1997 - 1999.

Technical Committees

1. Technical Committee on Multimedia Signal Processing. *IEEE Signal Processing Society.* 2005 - Current.
2. Technical Committee on Information Security and Forensics. *IEEE Signal Processing Society.* 2005 - Current.

Standard's Committees

1. Ad-Hoc Committee Member, *JPEG-LS*, Lossless Compression Standards Project, JPEG/JBIG, International Standards Organization, June 1996 - 1999.
2. Chair - Ad-hoc group on convergence. Lossless Compression Standard Project, International Standards Organization JPEG/JBIG committee meeting, Garmisch, Germany, June 1996 and Palo Alto, California, November 1996.

Organizing Committee

1. Local Arrangements and Finance Chair. *ACM Multimedia Security Workshop.*, August 2005.
2. Special Session Organizer. *Image Forensics*, International Conference in Image Processing, Singapore, September 2004.
3. Organizing Committee, NY State Cyber conference, Hudson Valley, NY, November 2003.
4. Track Chair. *Information Networking*, ITRE 2003, Newark, NJ, July 2003.
5. Track Chair. *Watermarking and Security*, ICME 2003, Baltimore, June 2003.
6. Special Session Organizer - *Watermarking Protocols*, Security and Watermarking of Multimedia Contents IV, San Jose, CA, February 2002 and 2003.
7. Special Session Organizer - *Digital Watermarking*, Multimedia Systems and Applications IV, ITCOM, Denver, August 2001.
8. Digital Media Co-Chair, *IEEE Conference on Multimedia and Expo*, New York, NY, July 2000.
9. Session Organizer - *Multimedia Content Protection*, IEEE International Conference on Information Technology: Coding and Computing, Las Vegas, NV, March 2000.
10. Session Organizer - *Image Security*, Multimedia Systems and Applications, Boston, MA, September 1999.
11. Session Organizer - *Still Image Compression*, 32'nd Asilomar Conference, Monterey, CA, November 1998.
12. Session Organizer - *Data Compression and Signal Processing Applications*, 31'st Asilomar Conference, Monterey, CA, November 1997.
13. Session Organizer - *Data Compression in Remote Sensing* International Geosciences and Remote Sensing Symposium, Lincoln, NE, May 1996.

Session Chair

1. *Image Froensics*, International Conference in Image Processing, Singapore, September 2004.
2. *Steganography and Steganalysis*, Security and Watermarking of Multimedia Contents, San Jose, CA, February 2002.
3. *Networking Protocols*, ITRE 2003, Newark, NJ, July 2003.
4. *Oral Session on Watermarking*, ICME 2003, Baltimore, June 2003.
5. *Authentication Protocols*, Security and Watermarking of Multimedia Contents V, San Jose, CA, February 2003.
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7. *Communications Approach to Watermarking* Security and Watermarking of Multimedia Contents, San Jose, CA, February 2001.

8. *Lossless Image Compression*, IEEE International Conference on Image Processing, Vancouver, Canada, September 2000.

9. *Web Search/Retreival and Applications*, IEEE Conference on Multimedia and Expo, New York, NY, July 2000.

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12. *Image Watermarking*, Security and Watermarking of Multimedia Content, San Jose, CA, February 2000.

13. *Image Security*, Multimedia Systems and Applications, Boston, MA, September 1999.

14. *Watermarking of Text, Graphics, and Halftones*, Security and Watermarking of Multimedia Contents, San Jose, CA, February 1999.

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18. *Multimedia Security*, International Conference on Imaging Science and Technology, Las Vegas, NV, June 1997.

19. *Data Compression in Remote Sensing*, IEEE International Geosciences and Remote Sensing Symposium, Lincoln, NE, May 1996.

20. *Data Compression in Remote Sensing*, IEEE International Geosciences and Remote Sensing Symposium, San Diego, CA, July 1994.

Program Committee

1. *International*

2. IEEE International Conference on Image Processing, *1999 - 2005.*

3. International Workshop on Digital Watermarking, *2003 - 2005.*

4. Multimedia Systems and Applications, *Boston, 2000 - 2004.*

5. IEEE Conference on Multimedia and Expo, *2000 - 2005.*

6. Security and Watermarking of Multimedia Contents, *San Jose, CA, 1999 - 2006.*

7. IEEE International Conference on Information Technology: Coding and Computing, *Las Vegas, NV, 2000 and 2001.*

8. Communications and Multimedia Security, *Darmstadt, Germany, May 2001.*

9. International Conference on Imaging Science and Technology, *Las Vegas, NV, June 1997.*

10. International Geosciences and Remote Sensing Symposium, *Lincoln, NE, 1996.*

Invited Panels, Tutorials and Keynote Talks

1. Digital Watermarking and Steganography. Invited Tutorial. SPCOM 2005, Indian Institute of Science, Bangalore. December 2004.

2. Information Hiding - Theory and Application. Invited Tutorial. Institute of Mathematical Sciences, National University of Singapore, December 2003.

3. The Future of Steganography. Invited Panel Member. NY State Cyber Security Conference, Hudson Valley, November 2003.

4. Image Steganography - Theory and Practice. Invited Keynote Speech, International Workshop on Digital Watermarking, Seoul, Korea, October 2003.

5. Fornet: A Distributed Network Forensics System. Invited Keynote Speech. Mathematical Models and Architectures for Computer and Network Security, St. Petersburg, Russia, October 2003.

6. Invited Panel Member. Signal Processing Magazine Forum on Information Hiding, 2003.

7. The Future of Digital Watermarking. Invited Panel Member. Multimedia Signal Processing Workshop, Virgin Islands, November 2002.

8. Digital Watermarks - Invited Panel Discussion, *Workshop on Multimedia Security, IEEE Multimedia Conference*, Austin, TX, July 1998.

9. Report on New International Standard for Lossless Image Compression. Invited Panel Discussion, *IEEE Data Compression Conference*, Snowbird, UT, March 1996.

Affiliations

Member - ACM, IEEE, SPIE,, IEEE Signal Processing Group.